

REMARKS

By the above amendment, the specification has been amended to update the patented status of the parent application which is directed to the apparatus whereas the present application is directed to the method. Additionally, the claims have been amended in a manner which is considered to overcome the rejection under 35 USC 112, second paragraph, utilizing the Examiner's suggestion. Thus, applicants submit that by the present amendment, claims 5 - 8 should be considered to be in compliance with 35 USC 112, second paragraph. Additionally, claims 5 - 8 have been amended to recite additional features and clarify features corresponding somewhat to features considered allowable in the parent application as will be discussed below. Additionally, a new abstract has been presented.

As to the rejection of claims 5 - 8 under 35 USC 103(a) as being unpatentable over US Patent No. 5,452,521 to Niewmierzycki in view of US Patent 5,512,320 to Turner et al, this rejection is traversed insofar as it is applicable to the present claims and reconsideration and withdrawal of the rejection are respectfully requested.

As to the requirements to support a rejection under 35 USC 103, reference is made to the decision of In re Fine, 5 USPQ 2d 1596 (Fed. Cir. 1988), wherein the court pointed out that the PTO has the burden under '103 to establish a prima facie case of obviousness and can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. As noted by the court, whether a particular combination might be "obvious to try" is not a legitimate test of patentability and obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. As

further noted by the court, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

Furthermore, such requirements have been clarified in the recent decision of In re Lee, 61 USPQ 2d 1430 (Fed. Cir. 2002) wherein the court in reversing an obviousness rejection indicated that deficiencies of the cited references cannot be remedied with conclusions about what is "basic knowledge" or "common knowledge".

The court pointed out:

The Examiner's conclusory statements that "the demonstration mode is just a programmable feature which can be used in many different device[s] for providing automatic introduction by adding the proper programming software" and that "another motivation would be that the automatic demonstration mode is user friendly and it functions as a tutorial" do not adequately address the issue of motivation to combine. This factual question of motivation is immaterial to patentability, and could not be resolved on subjected belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher."... Thus, the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion. (emphasis added)

Before discussing the cited art, applicants note that by the present amendment, independent claim 5 has been amended to recite a vacuum processing method for transferring a wafer in atmospheric air to a position within a vacuum processing chamber through a vacuum transfer chamber using atmospheric transfer equipment disclosed in an atmospheric transfer unit and performing a predetermined treatment to the wafer in the vacuum processing chamber and reciting the steps thereof. As now set forth in claim 5, the steps include an atmospheric transfer step of transferring the wafer in atmospheric air to the vacuum transfer chamber using the

atmospheric transfer equipment disposed in atmospheric air, a vacuum transfer step of transferring the wafer received from the atmospheric transfer equipment to a position for the predetermined treatment within the vacuum processing chamber using a vacuum transfer equipment disposed within a vacuum transfer chamber connecting the atmospheric transfer unit and the vacuum processing chamber. As now recited in claim 5, there are also provided the steps of detecting the displacement of the wafer in a transverse direction with a respect to a traveling direction near an ingress path of the vacuum processing chamber by comparing a correct position of the wafer passing a line which is predetermined in advance with an actual position of the wafer being transferred by the vacuum transfer equipment and a step of moving a vacuum robot of the vacuum transfer equipment which transfers the wafer in the transverse direction with respect to the traveling direction so as to correct the detected displacement of the wafer.

As shown in Figures 1 and 3 of the drawings of this application, a wafer 60a for example, which is in atmospheric air is transferred to a position within a vacuum processing chamber 30a, for example, through a vacuum transfer chamber 2 using an atmospheric transfer equipment, such as 7, which is disposed in an atmospheric transfer unit 1 so as to perform a predetermined treatment to the wafer in the vacuum processing chamber 30a. Thus, as shown in Fig. 1, the atmospheric transfer equipment 7 transfers a wafer 60a in atmosphere through the load lock chamber 8 wherein a vacuum robot 10 of vacuum transfer equipment, which is disposed in the vacuum transfer chamber 2, transfers the wafer received from the atmospheric transfer equipment via the load lock chamber 8 to a position for the predetermined treatment within the vacuum processing chamber 30a as shown, the vacuum transfer chamber 2 connects the atmospheric transfer unit 1 and the

vacuum processing chamber 30a, for example. As illustrated in Figs. 3 and 5 of the drawings of this application and considered in conjunction with Fig. 1 for example, and as described at page 10 of the specification, the correct position 601 of the wafer passing reference line L_1 in the traveling direction thereof, as represented by the direction of the arrow, is recorded in advance, and the wafer position 602 of the actual wafer being transferred by the vacuum robot 10 passing the reference line L_1 is recognized. Thereafter, by comparing these two positions, an amount of displacement Δ_1 in a transverse direction to the traveling direction of the actual wafer position 602 from the correct position 601, when the wafer passes the line L_1 , is determined, and by moving the arm of the robot 10 in the transverse direction with respect to the traveling direction by amount corresponding to the detected displacement quantity Δ_1 , the transfer position of the wafer can be corrected so that the wafer is placed at a predetermined position for treatment in the vacuum processing chamber.

By the present amendment, claim 5 has been amended to recite the aforementioned features, with claim 6 being amended in a somewhat similar manner while more particularly reciting the step of correcting the displacement of the wafer by moving an arm of the vacuum transfer equipment in the transverse direction with respect to the traveling direction based on the result of detection performed by a wafer position sensor. Dependent claims 7 and 8 have been amended in accordance with the recited features of the parent claims.

Turning to Niewmierzycki, as recognized by the Examiner, this patent fails to teach an atmospheric transfer step of transferring the wafer in atmospheric air to a vacuum transfer equipment using an atmospheric transfer equipment disposed in atmospheric air. Further, it is readily apparent that Niewmierzycki also does not

disclose a vacuum transfer step of transferring the wafer received from the atmospheric transfer equipment to a position for the predetermine treatment within the vacuum processing chamber using a vacuum transfer equipment disposed within a vacuum transfer chamber connecting the atmospheric transfer unit and the vacuum processing unit. Additionally, as now recited in claim 5, the correction of the displacement of the wafer is effected by moving a vacuum robot of the vacuum transfer equipment which transfer the wafer in the transverse direction with respect to the traveling direction so as to connect the detected displacement of the wafer. It is noted that claim 6 recites the correction of the displacement of the wafer by moving an arm of the vacuum transfer equipment in the transverse direction with respect to the traveling direction based on the result of detecting performed by a wafer position sensor. Such features are not disclosed or taught in the cited art.

Turning to Niewmierzycki, irrespective of the Examiner's position that equipment 14 is disposed within a vacuum transfer chamber 33 connecting the atmospheric air and the vacuum processing chamber with the Examiner referring to column 5, rows 19 and 20, such portion of Niewmierzycki merely indicates that a wafer 22 is transferred to the process chamber 31B by robot arm 14 and that 33 is a central chamber. It is not apparent from this disclosure whether the chamber 33 and/or the robot arm 14 is under atmospheric conditions or vacuum conditions, but it is apparent that there is no disclosure or teaching of an atmospheric transfer step and a vacuum transfer step, as recited in the claims of this application, wherein atmospheric transfer equipment is disposed in atmospheric air and a vacuum transfer equipment is disposed within a vacuum transfer chamber connecting the atmospheric transfer unit and the vacuum processing chamber. Furthermore, while the Examiner contends that Niewmierzycki discloses a step of detecting the

displacement of the wafer being transfer using a wafer position sensor (32A) disposed near an ingress path leading to the vacuum processing chamber (column 5, rows 7-10), applicants submit that this portion of Niewmierzycki describes correction of eccentricity and angular misalignment. That is, a sensor array 32a is utilized to determine the initial geometric center of a wafer 22 and after the wafer's initial position is determined, a wafer aligner 34A, which is necessarily separate from the robot arm 14, is utilized to correct an eccentricity of the wafer 22. Thus, irrespective of the position set forth by the Examiner and in light of the description in Niewmierzycki, applicants submit that there is no disclosure or teaching in such patent of the recited features of claims 5 and 6, as amended, in relation to the detection of the displacement of the wafer in the manner defined and the correction of the displacement of the wafer by "moving a vacuum robot of said vacuum transfer equipment which transfers said wafer in the transverse direction with respect to the traveling direction so as to correct the detected displacement of said wafer", as recited in claim 5, or by "moving an arm of said vacuum transfer equipment in the transverse equipment with respect to the traveling direction based on the result of detection performed by a wafer position sensor", as recited in claim 6, in addition to the other features not disclosed by Niewmierzycki. Applicants therefore submit that independent claims 5 and 6, as amended, patentably distinguish over Niewmierzycki in the sense of 35 USC 103 and should be considered allowable thereover.

With respect to the combination of Turner et al with Niewmierzycki, applicants submit that the proposed combination represents a hindsight reconstruction attempt utilizing the principle of "obvious to try" which is not the standard of 35 USC 103. In any event, it is readily apparent that Turner et al does not disclose or teach the step of detecting the displacement of the wafer in the manner recited or the step of

correcting the displacement in the manner recited, which features are not disclosed or taught by Niewmierzycki, as pointed out above. Thus, applicants submit that claims 5 and 6, as amended, patentably distinguish over this proposed combination of references in the sense of 35 USC 103 and should be considered allowable thereover.

With respect to the features of claim 6, applicants note that such features correspond to the apparatus features of the parent application considered allowable by the Examiner. Also, applicants submit that claim 5 as amended in reciting a step of moving a vacuum robot of the vacuum transfer equipment which transfers the wafer in the transverse direction with respect to the traveling direction so as to correct the detected displacement of the wafer also represents features not disclosed or taught by the cited art in the sense of 35 USC 103.

As to dependent claims 7 and 8, applicants submit that such claims when considered in conjunction with the parent claims, recite further features not disclosed or taught in the cited art, irrespective of the Examiner's position. Although the Examiner contends that the three optical sensors 42A-42D of Niewmierzycki detect the rim position of the wafer as described in column 7, rows 1-3, the sensors are located so as to detect the center of the wafer 22 with respect to the desired position, and therefor do not detect the rim position, as contended by the Examiner. Furthermore, it is readily apparent that irrespective of the contentions by the Examiner, Niewmierzycki does not disclose initial positioning of the wafer being performed by atmospheric air and displacement being detected in the manner set forth. Thus, the dependent claims further patentably distinguish over the proposed combination of references in the sense of 35 USC 103 and should be considered allowable thereover.

In view of the above amendments and remarks, applicants submit that all claims present in this application should now be in condition for allowance and issuance of an action of favorable nature is courteously solicited.

To the extent necessary, applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (Case: 648.41957CX1), and please credit any excess fees to such deposit account.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP



Melvin Kraus
Registration No. 22,466

MK/jla
(703) 312-6600